

CLAIMS

1. A method for storing data on a storage media, the method comprising:
writing the data to the storage media in a density sufficiently high to cause
spontaneous degradation of the data over time;
5 automatically reading the data prior to occurrence of a hard error; and
writing the data a second time.
2. The method of Claim 1 further comprising:
checking if a refresh indicator satisfies a predetermined condition related to
10 degradation of the data over time; and
performing said "writing the data a second time" only if said predetermined
condition is satisfied.
3. The method of Claim 1 further comprising:
15 writing the refresh indicator to a location in the storage media distinct from
another location used to write the data.
4. The method of Claim 3 further comprising:
using a date of performance of said "writing the data to the storage media" to
20 determine the refresh indicator.
5. The method of Claim 4 wherein:
said using includes setting the refresh indicator to be said date; and
said predetermined condition is satisfied when said refresh indicator is older
25 than a current date by a predetermined time period.
6. The method of Claim 4 wherein:
said determining includes setting the refresh indicator to be a refresh date
obtained by adding a predetermined time period to said date; and
30 said predetermined condition is satisfied when said refresh date is older than a
current date.
7. The method of Claim 2 further comprising:
determining, subsequent to said writing, a difference between a first value of
35 the refresh indicator determined contemporaneous with said writing and a second
value of the refresh indicator determined at a current time;
wherein said predetermined condition is satisfied when said difference is
greater than a predetermined limit.

8. The method of Claim 2 further comprising:
using an amplitude of a readback signal of the data as the refresh indicator.

5 9. The method of Claim 8 wherein said amplitude is hereinafter "first
amplitude," and the method further comprises:
writing the first amplitude to a location in the storage media distinct from
another location used to write the data;
measuring a second amplitude of the readback signal contemporaneous with
10 said checking; and
said checking includes determining a difference between the second amplitude
and the first amplitude.

10. The method of Claim 9 wherein:
15 said checking further comprises comparing said difference with a
predetermined limit.

11. The method of Claim 10 wherein:
said checking further comprises comparing a percentage value of said
20 difference with a predetermined percentage.

12. The method of Claim 2 wherein:
the checking is performed periodically without scanning the entire storage
media.

25 13. The method of Claim 2 wherein:
the refresh indicator is saved contemporaneous with said writing.

14. The method of Claim 1 wherein:
said "automatically reading the data" and said "writing the data a second time"
30 are both performed prior to occurrence of a soft error.

15. The method of Claim 1 wherein:
said "automatically reading the data" and said "writing the data a second time"
are both performed on a schedule for all the data.

35 16. The method of Claim 15 wherein:
said schedule is periodic.

17. A storage medium carrying:
data written in a density sufficiently high to cause spontaneous degradation
over time; and
a refresh indicator that indicates a predetermined degradation of the data.
- 5
18. The storage medium of Claim 17 wherein:
the data is held in a file; and
the refresh indicator is stored as an attribute of the file.
- 10
19. The storage medium of Claim 18 wherein:
the attribute is stored in a directory entry of a file system.
20. The storage medium of Claim 17 wherein:
the refresh indicator is based on a time when the data was most recently
15 written.
21. The storage medium of Claim 17 wherein:
the refresh indicator is based on an amplitude of a readback signal of the data
at the time of writing the data.
- 20
22. The storage medium of Claim 17 wherein:
the data is held as polarity of magnetized portion of the storage medium.
23. A carrier signal embedded with:
25 data; and
a refresh indicator that indicates a predetermined degradation of the data.
24. The carrier signal of Claim 23 wherein:
the refresh indicator is based on a time when the data was most recently
30 written.
25. The carrier signal of Claim 23 wherein:
the refresh indicator is based on an amplitude of a readback signal of the data
at the time of writing the data.
- 35
26. An apparatus including:
a storage medium embedded with data at a density sufficiently high to
spontaneously undergo thermal degradation with passage of time; and

an electronic device coupled to the storage medium to perform a refresh operation on the data when the data satisfies a predetermined condition related to the thermal degradation.

5 27. The apparatus of Claim 26, wherein:
 the predetermined condition is based on a time when the data was most recently written.

 28. The apparatus of Claim 26, wherein:
10 the predetermined condition is based on an amplitude of a readback signal of the data at the time of writing the data.

 29. A storage medium embedded with computer instructions for:
 writing data to a magnetic medium; and
15 automatically reading the data and writing the data back to the magnetic medium without scanning the magnetic medium.

 30. The storage medium of Claim 30 wherein:
 during each writing the data is recorded at a density sufficiently high to
20 spontaneously undergo thermal degradation with passage of time; and
 the computer instructions include checking if a refresh indicator satisfies a predetermined condition related to degradation of the data over time.

 31. A carrier signal embedded with computer instructions for:
25 writing data to a magnetic medium; and
 automatically reading the data and writing the data back to the magnetic medium without scanning the magnetic medium.

 32. The carrier signal of Claim 31 wherein:
30 during each writing the data is recorded at a density sufficiently high to spontaneously undergo thermal degradation with passage of time; and
 the computer instructions include checking if a refresh indicator satisfies a predetermined condition related to degradation of the data over time.